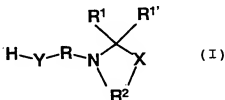


Amended claims

1. A polyurethane (A) comprising as synthesis components
- 5
- a) at least one organic diisocyanate or polyisocyanate,
- b) at least one compound containing at least one isocyanate-
10 reactive group and at least one free-radically polymeriz-
able unsaturated group and/or cationically polymerizable
group,
- c) at least one compound containing at least one isocyanate-
15 reactive group and at least one capped amino group and
having a molecular weight below 1000 g/mol,
- d) if desired, at least one compound containing at least one
isocyanate-reactive group and at least one actively dis-
20 persing group,
- e) if desired, at least one compound containing at least two
isocyanate-reactive groups, and
- f) if desired, compounds other than a) to d) containing at
25 least one isocyanate-reactive group, the allophanate
fraction being 5 to 65 mol% based on the lowest molecular
weight allophanate molecule.
2. A polyurethane (A) comprising as synthesis components
- 30
- a) at least one organic diisocyanate or polyisocyanate,
- b) at least one compound containing at least one isocyanate-
35 reactive group and at least one free-radically polymeriz-
able unsaturated group and/or cationically polymerizable
group,
- c) at least one compound containing at least one isocyanate-
40 reactive group and at least one capped amino group and
having a molecular weight below 1000 g/mol,
- d) 1-30 mol% of at least one compound containing at least
one isocyanate-reactive group and at least one actively
45 dispersing group,

- 5 e) if desired, at least one compound containing at least two isocyanate-reactive groups, and
- f) if desired, compounds other than a) to d) containing at least one isocyanate-reactive group.
3. A polyurethane (A) comprising as synthesis components
- 10 a) at least one (cyclo) aliphatic organic diisocyanate or polyisocyanate,
- b) at least one compound containing at least one isocyanate-reactive group and at least one free-radically polymerizable unsaturated group and/or cationically polymerizable group,
- 15 c) at least one compound containing at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- 20 d) if desired, at least one compound containing at least one isocyanate-reactive group and at least one actively dispersing group,
- 25 e) no compound containing at least two isocyanate-reactive groups, and
- f) if desired, compounds other than a) to d) containing at least one isocyanate-reactive group.
- 30 4. The polyurethane (A) according to any of claims 1 to 3, wherein synthesis component c) has a molecular weight below 750 g/mol.
- 35 5. The polyurethane according to any one of the preceding claims, comprising per 100 g of compound at least 0.01 mol of unsaturated free-radically or cationically polymerizable groups and/or at least 0.01 mol of capped amino groups.
- 40 6. The polyurethane according to any one of the preceding claims, wherein capped amino group is selected from the group consisting of open-chain amins, cyclic amins, ketimines, aldimines, N,O-acetals, N,O-ketals, carboxamides, sulfonamides, and amidines.
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7. The polyurethane according to any one of the preceding claims, wherein component c) has the formula (I)



where

R and R² independently are each a divalent organic aliphatic, cycloaliphatic or aromatic radical containing 2 to 20 carbon atoms which is unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles,

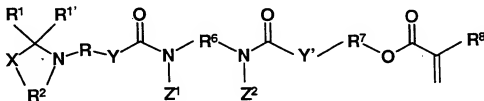
R¹ and R^{1'} independently are each hydrogen, C₁-C₁₈ alkyl, C₂-C₁₈ alkyl which is uninterrupted or interrupted by one or more oxygen and/or sulfur atoms and/or by one or more substituted or unsubstituted imino groups, or are each C₆-C₁₂ aryl, C₅-C₁₂ cycloalkyl or a five- or six-membered heterocycle containing oxygen, nitrogen and/or sulfur atoms, it being possible for each of said radicals to be substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles,

X is oxygen (-O-), unsubstituted or monosubstituted nitrogen (-N(R⁴)-) or >N-NR⁴R⁵,

Y is oxygen (-O-), unsubstituted nitrogen (-N(H)-) or sulfur (-S-), and

R⁴ and R⁵ independently are each hydrogen or C₁-C₄ alkyl.

8. The polyurethane according to any one of the preceding claims, comprising at least one of the following compounds of the formula (II)



or higher homologs thereof,

where

- 5 R, R¹, R^{1'}, R², X and Y are as defined in claim 7,
- Y' can be as defined for Y but can also be different,
- 10 R⁶ and R⁷ each independently are a divalent organic aliphatic, cycloaliphatic or aromatic radical comprising 2 to 20 carbon atoms and unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles,
- 15 R⁸ is hydrogen, methyl, ethyl or hydroxymethyl, and
- Z¹ and Z² can be identical or different and independently of one another are hydrogen or -(CO)-NH-R⁶-NCO.

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9. A polyurethane dispersion comprising

- 25 (A) a polyurethane according to any one of the preceding claims and including synthesis component d) and
- (C) if desired, one or more photochemically and/or thermally activable initiators, and
- 30 (D) if desired, further, typical coatings additives.

10. A coating composition comprising

- 35 either at least one polyurethane dispersion according to claim 9
- or at least one polyurethane (A) according to any one of claims 1 to 8 and also
- 40 (C) if desired, one or more photochemically and/or thermally activable initiators, and
- (D) if desired, further, typical coatings additives.

45 11. A method of coating a substrate, which comprises radiation curing a substrate coated with a material according to any one of the preceding claims and subjecting it to thermal

treatment at temperatures up to 160°C.

12. The method according to claim 11, wherein the thermal treatment takes place between 60 and 160°C.
- 5 13. The method according to either of claims 11 and 12, wherein the radiation curing is conducted under inert gas.
- 10 14. The use of a polyurethane according to any one of claims 1 to 8 in a radiation-curable coating composition.
- 15 15. The use of a material according to any one of claims 1 to 10 to coat wood, metal or plastic.
- 15 16. The use of a material according to any one of claims 1 to 10 in an automotive paint or automotive topcoat material.

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